COCCIDIOIDAL GRANULOMA IN SOUTHERN CALIFORNIA

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So far as we have been able to determine, only two cases of coccidioidal granuloma observed in Southern California have been reported in medical literature. Brown, in 1906, reported two cases seen in Los Angeles. Both of these had apparently acquired the infection in the San Joaquin Valley. While in the majority of all cases reported the infection appears to have been acquired in the San Joaquin Valley, in recent years an increasing number of cases undoubtedly infected elsewhere has been recognized. In our series about one-fourth of the cases appear to have originated in the San Joaquin Valley. Of the others, one is attributed to Mexico, one to Texas, one to Arizona, one to New Mexico, and the remainder to Southern California.

Our acquaintance with the disease dates from 1916, when the first case of the series was seen at the Los Angeles County Hospital. Since that time a total of nineteen cases has been recognized at that institution. In addition to these, we include four cases which occurred in the private practice of physicians in Los Angeles and Pasadena. In these the laboratory studies were carried out in the laboratory with which one of us is associated.

Our report thus includes twenty-three cases. Of these, eleven were Mexicans, three negroes, and nine Caucasians. Nineteen were males and four females. The ages range from 2 to 83 years.

Occupation seems to be a factor in the etiology of the disease, since those who worked on farms far outnumbered those of any other occupation; yet the series included a clerk, a student, an electrician, and a retired business woman. In no case could the portal of entry of the infection be demonstrated, but in several cases the findings suggested that infection was through the respiratory tract.

In Case No. 1 (see table) there was found in the anterior wall of the esophagus, a little above the level of the bifurcation of the trachea, an ulcer one centimeter in diameter. Imbedded in the ulcer was an oat kernel. Sections from the ulcer showed a granulomatous base containing a few parasites. Infected lymph nodes lay adjacent to the esophagus over the ulcer. It was suggested that the oat kernel might have been the carrier of the organism, and the esophagus the portal of entry. Unfortunately, animal inoculation with this foreign body was not performed.

CLINICAL FEATURES

Cutaneous lesions were not common. They occurred usually as reddish papules which broke down, forming discharging ulcers. They were found on various parts of the body. Subcutaneous abscesses were very common, occurring on all parts of the body. These were prone to break through the skin and discharge pus for a long time, but occasionally such lesions healed, others appearing on other parts of the body. Bone lesions were very common, occurring in twenty-one of the twenty-three cases. Many different bones were involved, those most commonly affected being the bones of the foot and the vertebrae. The involvement of the foot was always in the ankle region, and the joint was usually affected. Nearly all of these cases gave a history of injury to the ankle, such as sprain, followed soon after by swelling, suppuration and sinus formation after spontaneous or operative evacuation of the pus. Such a lesion was present in eleven of our cases, in nine of which it was the first lesion to be recognized, in five the only one found. We have been able to follow only two of these latter for a period of over two years after amputation of the affected part.

Infection of other bones was usually followed by suppuration of the surrounding soft parts which eventually reached the surface of the body.

Lung involvement was frequent, producing physical signs indistinguishable from tuberculosis.

Involvement of cervical lymph nodes was seen in two of the four children and in two adults.

The temperature range was from normal to 103 degrees Fahrenheit, according to the severity of the disease and the regions involved. The pulse was increased in frequency in proportion to the elevation of the temperature. The leucocyte count varied from normal to high polymorphonuclear leucocytosis, depending upon the extent of the lesions and the secondary infection present.

PATHOLOGY AND BACTERIOLOGY

Autopsy was performed upon the eight who died at the County Hospital. Material was also obtained at surgical operation in several cases. While a wide variety of lesions was found, there was nothing strikingly different from what has already been described by other investigators. Lung involvement was present in some degree in every autopsy and the lesions were very similar, both grossly and microscopically, to tuberculosis. In two instances active tuberculosis was also present, as shown by demonstration of the bacilli. Very striking was the freedom of the gastro-intestinal tract, liver, spleen and the genito-urinary tract from the infection. In only one instance were lesions of the genito-urinary tract found, a few miliary nodules in the kidneys. The bone lesions were usually markedly destructive. In a few instances, notably in Case No. 18, there were proliferative changes in the cortical portions. Roentgenological studies of some of these cases have been reported by Bowman and Taylor. In only one case was involvement of the nervous system found. Here there was a small granulomatous nodule in the cerebral cortex, in which the organisms could be demonstrated.

In every case in the series the organism has been demonstrated either in pus or in tissue, and has usually been cultured.

Animal inoculation has been performed in some instances. Blood cultures have been negative. At autopsy one and a half hours after death in Case No. 9, cultures from the blood in the right auricle yielded streptococcus hemolyticus and coccidioides immites.

TREATMENT AND PROGNOSIS

Various forms of therapy have been tried, but no drug has been found of value. In two cases subcutaneous lesions apparently responded to x-ray treatment, and these patients are well five and nine

No.	RACE	AGE	SEX	OCCUPATION	PROBABLE SOURCE	RESIDENCE IN CALIF.	LOCATION OF LESIONS	TOTAL DURATION	TREATMENT	OUTCOME
1	Mexican	25	Male	Farm and R. R. Laborer	So. Calif.	6 years	Ankles, lungs pericardium, subcutaneous abscesses	4 months	Drainage	Death
2	Negro	83	Male	Gardner	So. Calif.	25 years	Left ankle	2 months	Amputation	Well 5 years
3	Mexican	54	Male	Teamster	Mexico	1 year	Right groin, vertebrae Left wrist	1 year	None	Death
4	American	28	Male	Teamster	San Joaquin Valley	Life	Fingers, knee joints, subcutaneous abscesses	11 months	Amputation	Death
5	Mexican	48	Male	Farm laborer	Imperial Valley	4 years	Right ankle	8 months before observation	Refused amputation	Unknown
6	Negro	44	Male	Laborer	So. Calif.	8 years	Abscess lumbar region, lumbar vertebrae	5 months	Drainage	Death
7	Mexican	8	Male	Child	Unknown	Life	Fingers, toes, elbow, ankle, cerv. glands	Unknown		Unknown
8	Mexican	3	Male	Child	So. Calif.	Life	Ankle, subcutaneous abscesses, lungs, brain	7 months	Drainage	Death
9	Serbian	34	Male	Oil worker	Unknown	3 years	Skin, subcutaneous abscesses, wrist, skull, kidney	4 months	Potass. iodide	Death
10	Mexican	9	Male	Child	San Joaquin Valley	5 years	Lymph glands, fingers, ilium, tibia, lung	4 months	Potass. iodide	Death
11	Armenian	27	Male	Truck driver	San Joaquin Valley	7 years	Ankle	5 months before amputation	Amputation	Living 2 years
12	Mexican	34	Male	Painter	San Joaquin Valley	1 year	Ankle, knee, sacrum, sternum, subcutaneous abscess	4 months	Potass. iodide Carrell-Dakin	Death
13	Mexican	25	Male	Farm laborer	San Joaquin Valley	10 years	Vertebrae, ribs, pleura, subcutaneous abscesses	6 months		Death
14	Mexican	23	Male	Farm laborer	Unknown	Unknown	Ankle, cerv. glands	4 mos. before amputat.	Amputation	Living 1 year
15	Negro	28	Male	Farm laborer	Unknown	Unknown	Lungs, vertebrae, ribs, subcutaneous abscesses	1 month		Death
16	Mexican	34	Female	Housewife	New Mexico	2 years	Ankle	2 yrs. before observa.	Refused amputation	Unknown
17	American	61	Male	Electrician	Unknown	15 years	Ankle	16 mos. before amputat.	Amputation	Still in hospital
18	Mexican	2	Female	Child	Texas	4 months	Humerus	Unknown	Amputation	Still in hospital
19	American	39	Male	Clerk	Arizona	None	Subcutaneous abscesses, muscles of back.	14 months	Drainage	Still under observation
20	American	61	Female	Retired	So. Calif.	30 years	Head of radius and ulna	2 years	Curettage Drainage	Died of cerebral hemorrhage. Lesion healed.
21	American	53	Male	Veterinarian and farm laborer	Tulare Co.	14 years	Subcutaneous abscesses, wrist (metacarpals)	4 years before observation	Drainage	Living. Several lesions healed.
22	American	23	Female	Student	So. Calif.	Life	Lung, cervical glands. Subcutaneous abscesses	20 months	Arsenic, X-ray	Well 5 years
23	American	23	Male	None	So. Calif.	2 months	Ankle, subcutaneous abscesses	1 month before amputation. Abscesses 4 months later	Amputation of Ankle X-ray	Well 9 years

years, respectively, after their lesions healed. In one of these the subcutaneous lesions appeared after amputation of an affected ankle; in the other after what was clinically a long continued broncho-pneumonia. Ten of our cases are known to have died of the disease, one of another cause. Three have been lost sight of. Only four have been free from symptoms for a period of two years or more. Three of these have had amputation of an affected foot, and are well, two, five, and nine years later, respectively.

The duration of the disease in the fatal cases has been short, from one month to one year after the first symptoms were noticed. That some infected individuals may live for a period of years with little extension of the process suggests the existence of strains of low virulence or the power of the body to develop resistance against the infection.

CONCLUSIONS

Infection with coccidioides immites not infrequently occurs in Southern California. X-ray therapy appears to have been of value in two cases, and we believe that it should be given thorough trial. No other therapeutic measures except surgery have proved of value.

Note—Since this report was made, nine additional cases have been encountered. These we hope to include in a subsequent report.

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DISCUSSION

William B. Bowman (Brockman Building Los Angeles) — It was my good fortune to have made a thorough Roentgen study of five of the cases reported in this paper, all of which showed definite bone lesions. The following bone changes were noted at the time of their examination.

Case I — As listed in their table, revealed a small irregular area of necrosis involving the inner two-thirds of the articular surface of the tibia. There was also an irregular fuzzy thickening of the periosteum of the internal malleolus.

Case II—Left ankle. The articular surface of the tibia was irregular, showing beginning destruction of the joint surface. There were also a few small areas of rarefaction on the posterior surface of the tibia.

Case III — Left wrist. Roentgenograms revealed marked destruction of the articular surface of the radius, the bone having a punched-out appearance such as seen in cases of tuberculosis. The outer border of the radius showed a roughened, irregular, fuzzy thickening of the periosteum not seen in tuberculosis of the bone.

Case IV—Roentgen examination of the chest and spine of this patient was negative for any definite bone lesion. Left hand—All carpal and proximal ends of the second, third, fourth, and fifth metacarpal bones were poorly defined. The joint surfaces were practically destroyed and the carpal bones had practically lost their identity. There was a marked thickening of the soft tissues. These changes were identical with those found in tuberculosis. Right knee showed practically the same changes except that the patella was missing, it having been removed prior to the roentgen examination.

Case V—Right ankle. There were small areas of rarefaction in lower end of fibula. The tip was denuded of periosteum, with slight bone destruction. The internal malleolus showed marked bone destruction with considerable irregularity, and fuzzy thickening of the periosteum.

Summary — In practically all of these cases, the findings were typical of bone tuberculosis, with the exception of a peculiar roughening and fuzzy thickening of the periosteum which seems to be peculiar to this disease. These periosteal changes were not present, however, in Case No. IV.

From my limited experience I am of the opinion that these cases are not as rare as is generally supposed, and that most of these cases are diagnosed as cases of tuberculosis.

Raymond G. Taylor (Hospital Good Samaritan, Los Angeles)—It was my privilege to see most of the cases mentioned in this report, and make a roentgen study of the bone and chest lesions. A detailed roentgen report was made by me of eleven of these cases in 1922 and published in July, 1923. No attempt will be made to go into detail in this discussion, as anyone who is interested can find the details in the published article.

I do not believe that there is any uniform, constant roentgen finding that is characteristic of this disease. Practically any of the lesions that we have seen would justify a diagnosis of bone or lung tuberculosis when viewed from the x-ray standpoint alone. There are one or two points which make one suspicious of a diagnosis of coccidioidal granuloma, but nothing that is sufficiently definite to warrant an unsupported diagnosis. The suspicious points referred to are the rather unusual, circumscribed, large areas of soft tissue density that precede the bone lesions in the extremities and the unusually marked proliferative changes seen most frequently in the younger patients. Neither of these are sufficient to rule out tuberculosis, but they are, apparently, much more often found in the cases of coccidioidal granuloma than in tuberculosis.

The bone proliferation may be observed in a most unusual and marked degree after some operative interference, in the young, such as an attempt to clean out the diseased bone by curetting. In one case in which this was done, before a diagnosis was made and before the patient came under observation, a diagnosis of probable sarcoma was made. The proliferation was more rapid and intense than any the writer has ever seen in any type of lesion.

The fuzziness of the periosteum mentioned by Bowman has apparently been present in some of our cases, but only those which affected the bones about the ankle-joint.

So far as treatment is concerned, cases which have been radiated are among those which are still alive after some years. My opinion is that any benefit that may be derived from this type of treatment must, undoubtedly, be due to a stimulating of the natural defensive mechanisms in the tissues, rather than any direct action of the ray on the organisms.

Philip King Brown (909 Hyde Street, San Francisco)—The search for cases of coccidioidal granuloma is possibly responsible for the recognition of such a large number of cases in the period of eight years covered by Hammack and Lacey's report. I presume we are overlooking these cases all the time, and such reports as this should awaken us again to the fact that in all our large hospitals there must be such cases constantly. I should agree with the others that the portal of entry was the respiratory tract, although the skin cases may have been direct inoculation. I do not think that any case in a large hospital of a suppurating superficial lesion suggesting tuberculosis should be treated without cultures being made. It is hopeful that cases have apparently recovered where what seemed to be primary foci were extirpated surgically. Gardner has two in his Southern Pacific Hospital service where the amputation of a foot in one and the excision of an elbow-joint in the other resulted in apparent cures.

False Diverticula of the Jejunum — False diverticula of the intestine constitute a rare anomaly. A study of the literature reveals only twenty-seven cases. Three additional cases are reported by William M. Sheppe, Wheeling, W. Va. (Journal A. M. A., April 5, 1924), occurring within four weeks.